

AMENDMENTS TO THE CLAIMS

This Listing of Claims will replace all prior versions and listings of claims in this application.

Listing of Claims:

1. (Withdrawn) A one-by-one surface purification apparatus used in a manufacturing process of semiconductor devices or liquid crystal display devices, wherein substrates to be purified are set one-by-one, said apparatus comprising:
 - means for generating mist-containing saturated steam;
 - means for bringing said mist-containing saturated steam into contact with a surface of each of said substrates; and
 - means for spraying said mist-containing saturated steam onto said surface, wherein said mist-containing saturated steam is used to purify said surface.
2. (Withdrawn) A surface purification apparatus described in claim 1, wherein said surface is one selected from the group consisting of process surfaces from a substrate to a semiconductor device, surfaces of process apparatus and process apparatus parts, and surfaces of apparatus and apparatus parts in relation to lithographic processes.
3. (Withdrawn) A surface purification apparatus described in claim 1, wherein said surface is purified with said mist-containing saturated steam at a temperature of 70°C to 200°C.
4. (Withdrawn) A surface purification apparatus described in claim 1, further comprising a steam supply apparatus comprising a steam generation system, a steam-superheating system, a control system for supplied ultra-pure water quantity and heat amount, and a steam pressure control system, including a steam inlet and steam-spraying nozzle for arbitrarily switching and supplying said mist-containing saturated steam at a temperature of 70°C to 200°C under the control of a steam-superheating system.

5. (Withdrawn) A surface purification apparatus described in claim 4, wherein said steam supply apparatus further includes a switching system for a supply line for a solution containing a purification promotion ingredient and said ultra-pure water supply line, and an injection pump, and comprises a system for switching steam containing said purification promotion ingredient and steam not containing said purification promotion ingredient.

6. (Canceled)

7. (Canceled)

8. (Withdrawn) A one-by-one surface purification apparatus having substrates to be purified set one-by-one, comprising:

means for generating mist-containing saturated steam; and

a chamber;

said chamber comprising:

an atmosphere discharge system;

means for bringing said mist-containing saturated steam into contact with a surface of each of said substrates; and

means for spraying said mist-containing saturated steam onto said surface, wherein said mist-containing saturated steam is used to purify said surface.

9. (Canceled)

10. (Withdrawn) A one-by-one surface purification apparatus having substrates to be purified set one-by-one, comprising:

means for generating saturated steam;

means for generating superheated steam; and

a chamber;

said chamber comprising:

an atmosphere discharge system;

means for bringing at least one of said saturated steam and said superheated steam into contact with a surface of each of said substrates; and

means for spraying at least one of said saturated steam and said superheated steam onto said surface,

wherein said atmosphere discharge system further comprises a suction system, and the surface being processed is dried by discharging the atmosphere in the chamber after superheated steam processing, and

wherein at least one of said saturated steam and superheated steam is selectively used to purify said surface.

11. (Currently amended) A one-by-one surface purification method used in a manufacturing process of semiconductor devices or liquid crystal display devices, wherein substrates are to be purified one by one, said method comprising the steps of:

generating mist-containing saturated steam;

bringing said mist-containing saturated steam into contact with a surface of each of said substrates by using a steam introduction valve; and

spraying said mist-containing saturated steam onto said surface by using a steam spraying nozzle,

wherein said mist-containing saturated steam is used to purify said surface.

12. (Previously presented) A surface purification method described in claim 11, wherein said surface is one selected from the group consisting of process surfaces from a substrate to a semiconductor device, surfaces of process apparatus and process apparatus parts, and surfaces of apparatus and apparatus parts in relation to lithographic processes.

13. (Previously presented) A surface purification method described in claim 11, wherein said surface is processed with said mist-containing saturated steam at a temperature of 70°C to 200°C.

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Withdrawn) A one-by-one surface purification method used in a manufacturing process of semiconductor devices or liquid crystal display devices, wherein substrates to be purified are set one by one, said method comprising the steps of:

generating saturated steam;

generating superheated steam;

bringing at least one of said saturated steam and said superheated steam into contact with a surface of each of said substrates; and

spraying at least one of said saturated steam and said superheated steam onto said surface,

wherein said surface is a silicon substrate, and said silicon surface is made to be a hydrogen termination structure by steam-processing silicon exposed on said silicon substrate surface such that the peak ratios of Si-O/Si-H are at most 0.05, and

wherein at least one of said saturated steam and superheated steam is used as said steam to purify said surface.

20. (Previously presented) The method of claim 11, wherein the mist-containing saturated steam is introduced into a processing chamber with an introduction valve and the mist-containing saturated steam is sprayed onto a surface through a steam spraying nozzle.